Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington D.C., 20554

In the Matter of	)	
	)	
The Development of Operational,	)	
Technical and Spectrum Requirements	)	WT Docket No. 96-86
For Meeting Federal, State and Local	)	
Public Safety Agency Communication	)	
Requirements Through the Year 2010	)	
	)	
Establishment of Rules and Requirements	)	
For Priority Access Service	)	

COMMENTS OF MOTOROLA TO PETITIONS FOR RECONSIDERATION

Motorola hereby files these comments in response to selected petitions for reconsideration and clarification filed against the FCC's *First Report and Order* in the above-captioned proceeding.[1]

The *First Report and Order* responds to the Congressional mandate to allocate 24 MHz of spectrum from the 746-806 MHz band for public safety use and, also, to adopt new rules that allow for the commencement of licensing in this new band by September 30, 1998.[2] To this end, the *First Report and Order* contains a spectrum band plan that identifies 24 MHz of 700 MHz spectrum for general use, wideband data operations, and interoperability. To help manage this new allocation, the FCC created a new Federal

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[1] *First Report and Order and Third Notice of Proposed Rule Making,* WT Docket No. 96-86, FCC 98-191, released September 29, 1998, 63 Fed. Reg. 58645 (November 2, 1998) [*hereinafter First Report and Order* or *Third NPRM*].

[2] *See* Balanced Budget Act of 1997, Pub. L. No. 105-33, § 3004, 111 Stat. 251 (1997) (BBA-97).

Advisory Committee, the National Coordinating Committee or NCC, that will have a wide range of coordination and operational responsibilities defined by its charter. Finally, the *First Report and Order* adopts technical standards for land mobile operations in the 746-806 MHz band including protection criteria that recognizes the continued existence of broadcast television stations within the band.

Officially, seventeen parties, including Motorola, filed petitions asking the FCC to reconsider or clarify at least portions of its *First Report and Order.*[3] Motorola hereby responds to several of the technical points raised by the petitioners.

The Federal Law Enforcement Wireless Users Group (FLEWUG) argues that the 700 MHz public safety band plan that allows mobile transmitters to operate in the 794-806 MHz band exacerbates possible interference problems in the Global Navigation Satellite System (GNSS)[4] band (1559-1605 MHz) and that the FCC should restrict that portion of the allocation to base-to-mobile transmissions.[5] In essence, FLEWUG is asking that the FCC reverse the base and mobile transmitter allocations.

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[3] Public Notice, Report No. 2312, January 14, 1999.

[4] The GNSS embodies two existing satellite navigation systems; the Global Positioning Satellite (GPS) system operated and maintained by the United States and GLONASS which is operated and maintained by the Russian Federation. These two satellite systems utilize portions of the 1559-1610 MHz band allocated to the Aeronautical Radionavigation-Satellite Service (space to earth).

[5] Federal Law Enforcement Wireless Users Group's Petition for Reconsideration and Clarification, WT Docket No. 96-86, December 2, 1998, at 25. Motorola notes that the FCC's Public Notice announcing receipt of the various petitions for reconsideration failed to include FLEWUG's petition. Motorola assumes that this was an oversight given that the petition appears timely filed and germane to the relevant issues.

In Motorola's view, this is not a painless solution. While preventing mobile operations in the 794-806 MHz band may ease concerns about potential interference to GLONASS receivers, there are several reasons why the FCC's adopted band plan best serves the interests of public safety. First, prohibiting the use of the mobile transmitters in the 794-806 MHz base station allocation as proposed by FLEWUG would affect the ability of public safety users to communicate unit-to-unit in the "talk around" mode.[6] Law enforcement tactics often require that mobile units operate in this manner to facilitate real-time interoperability and to enhance the safety of law enforcement officers. If mobile units cannot tune to the base station transmit frequencies as proposed by FLEWUG, additional spectrum will be needed to effectuate talk-around.

Second, as noted by FLEWUG, reversing the base and mobile allocations will require that a guard band be established between the upper edge of the 794-806 MHz base transmit band and the lower edge of the existing 806-824 MHz mobile transmit band. At least a one megahertz guard band would be needed to prevent harmful interference to existing mobile units, including public safety systems, operating above 806 MHz. The establishment of such a guard band will further reduce the ability of the 700 MHz allocation to meet the immediate needs of public safety.[7]

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[6] Typically, mobile transmissions travel to the base station receiver and are then relayed to other mobile units on the base station transmit frequency. Public safety users often require the ability to tune the mobile unit to a "base station transmit" frequency in order to communicate unit-to-unit while by-passing the network infrastructure.

[7] Motorola reminds the Commission that the PSWAC Final Report indicated that public safety requires the immediate allocation of 25 MHz. The Commission has thus far allocated 24 MHz. The establishment of a guard band between existing 800 MHz allocations would reduce this to at least 23 MHz. Coupled with the preclusive effect of

Third, the adopted mobile transmit/receive plan, which was recommended by both Motorola and NPSTC, is optimal for public safety use because it provides manufacturers the opportunity to easily broaden the bandwidth of mobile radios to provide interoperability between 700 MHz and 800 MHz band radios.[8] Reversing the plan will complicate the design of dual-band mobile receivers by requiring manufacturers to further increase receiver bandwidth in order to accommodate talk-around in the 764-776 MHz band. This will further add to the cost of public safety equipment.

Motorola appreciates the desire of FLEWUG members to protect GNSS receivers and concedes that additional precautions can be made with the location of base stations to further minimize potential interference to aeronautical GNSS operations. As demonstrated in Motorola's comments to the *Third Notice of Proposed Rule Making*, however, the potential interference relationship between 700 MHz public safety systems and GNSS receivers is actually quite limited.[9] Only a small portion of the public safety mobile allocation has a direct second harmonic relation with frequencies assigned to GLONASS and it is unclear to Motorola that GLONASS will be used in this country for critical safety-related functions such as Category I precision landings.[10] Thus, given the

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over-protected incumbent broadcast stations, the ability of the 700 MHz to address public safety spectrum shortfalls is being undermined.

[8] Indeed, compatibility with existing 800 MHz allocations was a key factor in the FCC's initial decision to allocate the 764-776/794-806 MHz bands to public safety. *See, In the Matter of Reallocation of Television Channels 60-69, the 746-806 MHz Band,* ET Docket No. 97-157, *Report and Order,* released January 6, 1998, at ¶13.

[9] *Comments of Motorola, Third Notice of Proposed Rule Making*, WT Docket No. 96-86, filed January 19, 1999.

[10] *Id.* at 5.

unlikelihood that any real interference will occur, Motorola believes that it would be unwise for the FCC to overlook the benefits of allowing mobile transmitters in the 794-806 MHz band.

FLEWUG also recommends that the FCC specify receiver standards.[11] In earlier phases of this proceeding, Motorola recommended against the adoption of government established receiver standards, not because Motorola equipment would have any problem in meeting the minimum established standard, but because we believe that industry-developed standards are more easily modified when changes in the marketplace so dictate. In that regard, we note that two TIA subcommittees are actively involved with defining land mobile receiver standards.[12] Given the progress made within the TIA, we believe that the FCC should instead encourage an industry solution that can be incorporated into any procurement request issued by any public safety user.

Finally, Motorola addresses the technical issues raised in Ericsson's petition for reconsideration. First, Motorola shares Ericsson's enthusiasm for the coupled power concept adopted by the FCC as recommended by Motorola.[13] We note that Ericsson expressed concern that adequate analysis has not been conducted on the recommended

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[11] FLEWUG Petition for Reconsideration and Clarification at 23.

[12] TIA subcommittees 8.6 (Mobile and Personal Private Radio Standards, Equipment Performance) and the TR 8.1 (Mobile and Personal Private Radio Standards, Methods of Measurement) are currently working on updating document EIA/TIA 603, which is an existing standard containing analog receiver standards, as well as two documents on digital transceivers.

[13] Ericsson Petition for Reconsideration at 10.

ACCP requirement values at this time.[14] We further note that Motorola also addressed this issue in its petition for reconsideration and requested modified ACCP requirement values due to nuances introduced by the FCC's adopted measurement procedures.[15]

Motorola strongly encourages the FCC to proceed with the coupled power approach but acknowledges that further industry analyses may be helpful to finalize the final ACCP requirement values and measurement procedures. We ask that the FCC work with the manufacturers in the TIA process to ensure that final recommendations be submitted within a very short period of time -- Motorola recommends June 15th as a deadline. If necessary, the FCC could defer consideration on this specific issue until that time. In Motorola's view, industry consensus is strongly preferred to further requests for reconsideration and regulatory uncertainty.

Second, Ericsson's petition contains a discussion on automatic power control (APC) and concludes that "this feature must be implemented throughout the communications network including radio infrastructure as well as in the mobile and portable terminal units."[16] Based on this, it is unclear to Motorola if Ericsson intends that the FCC adopt a rule requiring APC on base station transmitters. While Motorola would not object if the rules contained sufficient flexibility to allow for infrastructure APC, we do not believe that its use should be mandated.

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[14] *Id.* at 11.

[15] Motorola Petition for Reconsideration and Clarification at 21.

[16] Ericsson Petition for Reconsideration at 15.

APC on base stations is a valid solution particularly for cellular radio systems where the outbound link is communicating to a single unit and where the outbound path is comparable to the inbound path. However, in group dispatch systems, the outbound link is normally communicating to multiple units located throughout the coverage area. If the outbound power level is "controlled" by an inbound call from a nearby unit, the resulting power level may be insufficient to adequately communicate with mobile receivers located at the fringe of the coverage area. While future public safety system designs may be able to take advantage of this feature, Motorola believes that infrastructure APC should be a voluntary design feature and not required by FCC rules.

Motorola does oppose Ericsson's proposal that the FCC adopt a spectrum efficiency standard that requires a minimum of one voice path per 6.25 kHz of bandwidth. FCC adoption of this proposal would essentially prohibit the use Project 25 digital products, which is the preferred technology choice of the vast majority of public safety users, in the 700 MHz band. Further, adoption of this policy would accelerate public safety technology requirements ahead of those established for business and industrial operations.[17] Motorola believes that the FCC should not require public safety users to assume the responsibility for funding the development of new technology and should therefore reject this proposal.

[17] Section 90.203 of the FCC's Rules specifies a spectrum efficiency standard for equipment authorizations of one voice path per 6.25 kHz after the year 2005 for the private land mobile "Refarming" bands.

Finally, Motorola supports Ericsson's request that further flexibility be provided in the aggregation of wideband channels beyond a maximum of 150 kHz.[18] While a total of 600 kHz, as suggested by Ericsson, is more than that proposed by Motorola, we do believe that the FCC's rules prematurely limit the design of new public safety data applications.

In conclusion, Motorola recommends that the FCC continue to define the technical service rules for the 700 MHz band in a manner that expedites the availability of these frequencies for public safety use.

Respectfully Submitted,

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[18] Ericsson Petition for Reconsideration at 4.

CERTIFICATE OF SERVICE

I hereby certify that on this 5th day of February, 1999, I caused copies of the foregoing Comments Of Motorola To Petitions For Reconsideration to be mailed via first-class postage prepaid mail to the following:

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